## EXPLANATION

GEOLOGY GENERALIZED FROM HOARE AND COONRAD (1978)

### CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

## Qu ) QUATERNARY INTRUSIVE ROCKS

Qtb	Pleistocene	QUATERNARY		
QTs	Plio-Pleistocene	QUATERNARY or TERTIARY		
Tv	Early Tertiary	TERTIARY	Tif Tim Tn	TERTIARY
Ks	Late Cretaceous Maestrichian ?		ТКд	TERTIARY AND CRETACEOUS
Kk	Upper and Lower Cretaceous	CRETACEOUS		

KJvs	Lower Cretaceous to Middle Jurassic	CRETACEOUS AND JURASSIC			
Jk Jvs	) Middle to Lower Upper Jurassic			`	JURASSIC AND
Jivs	Lower Jurassic	JURASSIC	Jg Jum Jt	}	JURASSIC ?
Rvs	Lower Cretaceous	MESOZOIC			
PI	- to -	AND			
DOI	Lower Ordovician ?	PALEOZOIC			
Pzcs	)	PALEOZOIC	Pzmg	)	PALEOZOIC ?
p€ p€k	}	PRE-CAMBRIAN			

#### DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

UNCONSOLIDATED SEDIMENTARY DEPOSITS

## SEDIMENTARY, VOLCANIC, AND METAMORPHIC ROCKS

#### VOLCANIC ROCKS AND VOLCANOGENIC SEDIMENTS - Chiefly andesitic flows and tuffs SUMMIT ISLAND FORMATION - Nonmarine conglomerate, sandstone, shale, and carbonaceous mudstone KUSKOKWIM GROUP - Conglomerate overlain by interbedded graywacke, siltstone, and shale; commonly micaceous; mostly marine

LIMY GRIT AND LIMESTONE - Chiefly angular grit cemented by bioclastic limestone TUFFS AND SEDIMENTARY ROCKS - Varied assemblage of andesitic tuffs, graywacke, siltstone, impure limestone, and tuffaceous chert; fuff and tuffaceous sediments commonly laumontitized

Кь BUCHIA RIDGE GRAYWACKE - Chiefly interbedded calcareous graywacke, siltstone, and conglomerate with local coquinas of Buchia shells

#### VOLCANIC AND SEDIMENTARY ROCKS - Interbedded intermediate to mafic flows, tuffs, tuffaceous sedimentary rocks, and argillite; intermediate composition tuffaceous rocks commonly laumontitized JK KULUKAK GRAYWACKE - Chiefly very hard lithic graywacke and siltstone with local conglomerate

GRAYWACKE AND CONGLOMERATE - Marine graywacke, siltstone, and conglomerate; commonly calcareous

VOLCANIC AND SEDIMENTARY ROCKS - Andesitic, trachytic, and basaltic flows and breccias interbedded with volcanogenic sedimentary rocks JIVS VOLCANIC AND SEDIMENTARY ROCKS - Mafic flows and breccias interbedded with volcanogenic sedimentary rocks; fractures commonly coated with laumontite

MZPZ MESOZOIC AND PALEOZOIC ROCKS UNDIVIDED - Widespread marine unit including mafic to intermediate volcanic rocks, tuffaceous sedimentary rocks, chert, argillite, siltstone, graywacke, conglomerate, and limestone THVS

VOLCANIC AND SEDIMENTARY ROCKS (Upper Triassic) - Locally differentiated marine unit of chert, tuffaceous cherty rocks, argillite, siltstone, wackes, conglomerate, limestone, and mafic flows and breccia

Pv VOLCANIC ROCKS (Permian) - Locally differentiated marine unit of pillow basalts, massive mafic flows, breccia, and tuff PI LIMESTONE (Permian) - Locally differentiated thin unit of marine limestone; generally tuffaceous, commonly has strong fetid odor

LIMESTONE - Thin-bedded to massive limestone with minor interbedded tuff and mafic flows; locally recrystallized to marble with interbedded quartzite and quartz-chlorite schist CALCAREOUS SCHIST (Permian or older?)

KANEKTOK METAMORPHIC COMPLEX - Gneiss, schist, amphibolite, and marble; upper greenschist to lower amphibolite facies p€I MARBLEIZED LIMESTONE - Locally differentiated

FELSIC INTRUSIVE ROCKS - Chiefly rhyolitic to dacitic dikes and sills; locally mapped MAFIC INTRUSIVE ROCKS - Diabase, basalt, dioritic, and gabbroic dikes and sills locally mapped

NAROGARUM COMPLEX - Quartz-rich porphyritic felsite intrusive-extrusive complex of dikes, sills, tuff, and GRANITIC ROCKS - Chiefly quartz monzonite, granodiorite, and quartz diorite stocks

GABBROIC ROCKS - Commonly shows compositional layering and generally associated with ultramafic rocks ULTRAMAFIC ROCKS - Serpentinite, dunite, and websterite

#### TRONDHJEMITE - Associated with serpentinite and gabbro METAGABBRO AND GREENSTONE - Probable dismembered ophiolite complex of mafic flows, dikes, volcanoclastic rocks, and gabbro altered by greenschist facies metamorphism and calcium metasomatism

GEOLOGIC SYMBOLS Contact. Known, approximately located, gradational, and inferred. Most contacts between bedded rock units are probably faults

Fault or fault zone. Dashed where approximately located, inferred, or concealed Thrust fault. Dashed where approximately located, inferred, or concealed. Sawteeth on upper plate

# GEOCHEMICAL SYMBOLS

RED MOUNTAIN ULTRAMAFIC BODY

RED MOUNTAIN CONTACT ZONE

### GEOCHEMICAL SAMPLE SITES ROCK (CLARK, GRYBECK, GREENWOOD, AND OTHERS, 1978;

★ CONCENTRATE (OVERSTREET, AND OTHERS, 1973)

OFFSHORE AND ONSHORE SEDIMENTS (BARNES, AND

BEACH AND STREAM SEDIMENTS (BERRYHILL, 1963)

 STREAM DRAINAGE SEDIMENT (HESSIN, AND OTHERS, 1978) STREAM DRAINAGE SEDIMENT (CLARK, GRYBECK, HESSIN,

STREAM DRAINAGE SEDIMENT (EAKINS, 1968, 1969)

# ¥200 NUMBER WITH SOLID ROCK SAMPLE-SITE SYMBOL

REPRESENTS GEOCHEMICAL CONCENTRATION IN PARTS PER MILLION (PPM)( \* INDICATES ATOMIC-ABSORPTION)

 SOLID STREAM-DRAINAGE SAMPLE-SITE SYMBOL INDICATES GEOCHEMICAL ABUNDANCE OF 90TH PERCENTILE VALUE OR GREATER IN TWO OR MORE

GEOCHEMICAL DETERMINATIONS AS SHOWN IN HISTOGRAMS ABUNDANCE SYMBOLS REPRESENTING 95TH PERCENTILE

OR GREATER CONCENTRATIONS DETERMINED IN STREAM-DRAINAGE SITE SAMPLES ARE SHOWN WITH HISTOGRAMS (SHEET 1)

## DISCUSSION OF GEOCHEMISTRY

THE TWO SHEETS COMPRISING THIS REPORT SHOW THE DISTRIBUTION AND ABUNDANCE OF COPPER AS GEOCHEMICALLY DETERMINED IN VARIOUS SAMPLE MEISTER ISLAND QUADRANGLES REGION. SHEET 1 COVERS THE ENTIRE REGION AND SHEET 2 COVERS THE AREA OF ABUNDANT SAMPLE DATA IN THE VICINITY OF PLATINUM. SAMPLE LOCATION AND CONCENTRATION SYMBOLS ARE SIMILAR ON BOTH SHEETS. DATA PRESENTED HAVE BEEN COMPILED FROM ANALYSES AND LOCATIONS REPORTED BY BARNES AND OTHERS (1978); CLARK, GRYBECK, GREENWOOD, AND OTHERS (1978); CLARK, GRYBECK, HESSIN, AND OTHERS (1978); COONRAD AND OTHERS (1978); EAKINS (1968, 1969); HESSIN AND OTHERS (1978); AND OVERSTREET AND OTHERS

RIVER LAKES HISTOGRAM AND THE FIVE HISTOGRAMS, BASED ON THE ANAL-YSES REPORTED BY HESSIN AND OTHERS (1978) WITH RESPECTIVE SAMPLE POPULATIONS OF BETWEEN 800 AND 900 SAMPLES, APPEAR TO PROVIDE REPRESENTATIVE CONCENTRATION STATISTICS. THE GENERALIZED GEOLOGIC MAP DATA INCLUDED IN SHEET 1 AND THE MORE DETAILED GEOLOGIC MAP OF THE REGION (HOARE AND COONRAD, 1978) SHOULD BE UTILIZED IN CONSIDERING POSSIBLE SOURCE ROCKS AND SIGNIFICANCE OF THE COPPER THAT HAS BEEN DETECTED IN VARIOUS GEOCHEMICAL SAMPLES.

BACKGROUND INFORMATION RELATING TO THIS REPORT IS PUBLISHED AS U.S. GEOLOGICAL SURVEY OPEN-FILE REPORT 78-9 (AVAILABLE FROM THE SAME SOURCE AS THE MAP) This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

